2   LUC-280/Balachandran 15-4

Claim Amendments

1. (currently amended)   A method, comprising steps of:

determining a soft decision metric at a receiver for a plurality of symbols transmitted over a communication channel;

employing the soft decision metric to determine <u>mean</u> symbol <u>error probability</u> or <u>mean</u> bit error probability; and

comparing the <u>mean</u> symbol or bit error probability to one or more predetermined thresholds to select a communication protocol of the communication channel.

2. (previously presented)   The method of claim 1, wherein the step of determining the soft decision metric for a plurality of symbols comprises steps of:

observing an output of the communication channel; and

determining a derived probability for each one of the plurality of transmitted symbols through employment of a set of observations at the output of the communication channel.

3. (previously presented)   The method of claim 1, further comprising a step of deriving an error rate estimate as a moving average of the symbol or bit error probability.

4. (previously presented)   The method of claim 3, further comprising a step of employing the error rate estimate in providing feedback to the transmitter.

5. (previously presented)   The method of claim 1, wherein the step of determining the soft decision metric for the plurality of symbols comprises a step of deriving the soft decision metric from an output of at least one of an equalizer and a demodulator.

6. (original)   The method of claim 5, wherein the output of the equalizer or demodulator comprises a log likelihood ratio.

7. (original)   The method of claim 1, wherein the transmitted symbols comprise binary values.

8. (canceled)

9. (currently amended) The method of claim 1, wherein the step of comparing the <u>mean</u> symbol or bit error probability to the one or more predetermined thresholds to select the communication protocol of the communication channel is performed at a transmitter.

10. (currently amended) The method of claim 1, wherein the step of comparing the <u>mean</u> symbol or bit error probability to the one or more predetermined thresholds to select the communication protocol of the communication channel is performed at the receiver.

11. (currently amended) The method of claim 1, wherein the step of comparing the <u>mean</u> symbol or bit error probability to the one or more predetermined thresholds to select the communication protocol of the communication channel comprises a step of selecting at least one of a modulation scheme, a coding scheme, symbol rate, and a power level.

12. (canceled)

13. (previously presented)   A system comprising:
a transmitter that transmits a plurality of symbols over a communication channel;
a receiver that receives a plurality of symbols over the communication channel;
a decision device that provides a plurality of soft decision metrics for a plurality of symbols received over the communication channel; and
a processor that obtains an error rate estimate through employment of symbol or bit error probability values computed from the soft decision metrics;
wherein the processor compares the symbol or bit error probability values to one or more predetermined thresholds to select a communication protocol of the communication channel.

14. (original) The system of claim 13, further comprising a feedback link that communicates an error rate estimate from the receiver to the transmitter.

15. (previously presented)   The system of claim 14, wherein the transmitter or the receiver changes a communications protocol in response to the error rate estimate.

16. (previously presented)   The system of claim 13, wherein the transmitter or the receiver changes one or more of a modulation and coding scheme in response to the error rate estimate.

17. (previously presented)   The system of claim 13, wherein the decision device comprises one or more of a demodulator and an equalizer.

18. (previously presented)   The system of claim 13, wherein the decision device performs demodulation through employment of a Viterbi decoder algorithm or a variant of the Viterbi decoder algorithm.

19. (previously presented)   The system of claim 13, wherein the decision device performs equalization through employment of one or more of a Bahl-Cocke-Jelinek-Raviv algorithm, a soft output Viterbi algorithm, a variant of the Bahl-Cocke-Jelinek-Raviv algorithm, and a variant of the soft output Viterbi algorithm.

20. (previously presented)   An article, comprising:

a computer-readable signal-bearing medium;

means in the medium for determining a soft decision metric at a receiver for a plurality of symbols transmitted over a communication channel;

means in the medium for employing the soft decision metric to determine symbol or bit error probability; and

means in the medium for comparing the symbol or bit error probability to one or more predetermined thresholds to select a communication protocol of the communication channel.

21. (previously presented)   The method of claim 1, wherein the step of determining the soft decision metric at the receiver for the plurality of symbols transmitted over the communication channel comprises steps of:

observing an output of the communication channel; and

generating a probability mass function for one or more of the plurality of transmitted symbols from a set of observations at the output of the communication channel.

22. Canceled.

23. (previously presented)   The system of claim 13, wherein the decision device observes an output of the communication channel, wherein the decision device generates a probability mass function for one or more of the plurality of transmitted symbols from a set of observations at the output of the communication channel.

24. (previously presented)   The system of claim 13, wherein the communication protocol comprises a first communication protocol, wherein the transmitter or the receiver implements the first communication protocol for the communication channel upon the symbol or bit error probability exceeding a first threshold of the one or more predetermined thresholds;

wherein the transmitter or the receiver implements a second communication protocol for the communication channel upon the symbol or bit error probability exceeding a second threshold of the one or more predetermined thresholds.

25. (previously presented)   The article of claim 20, wherein the means in the medium for determining the soft decision metric observes an output of the communication channel;

wherein the means in the medium for determining the soft decision metric generates a probability mass function for one or more of the plurality of transmitted symbols from a set of observations at the output of the communication channel.

26. (previously presented)   The article of claim 20, wherein the communication protocol comprises a first communication protocol, wherein the means in the medium for comparing implements the first communication protocol for the communication channel upon the symbol or bit error probability exceeding a first threshold of the one or more predetermined thresholds;

wherein the means in the medium for comparing implements a second communication protocol for the communication channel upon the symbol or bit error probability exceeding a second threshold of the one or more predetermined thresholds.